

REMARKS

Claims 7-8, 18-22, and 52-54 are presently pending in this application. The status of the application in light of the Office Action mailed May 12, 2005 is as follows:

(A) Claims 19 was rejected under 35 USC § 112 for insufficient antecedent basis.

(B) Claims 7-8, 18-22, and 52-54 were rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 5,679,063 ("Kimura") in view of U.S. Patent Application No. 09/785,815, Publication No. 2002/0113039 ("Mok").

A. Response to Section 112 Rejection

Claim 19 provides sufficient antecedent basis for the term "the distributor" and the Section 112 rejection of claim 19 should be withdrawn. Lines 5-6 of claim 19 recite, "the solution dispenser having a support extending over the pad and *a distributor* carried by the support" (emphasis added). Accordingly, sufficient antecedent basis for "the distributor" recited in line 7 is established in lines 5-6. Therefore, the undersigned respectfully submits that this rejection should be withdrawn.

B. Response to Section 102(b) Rejection

Claims 7-8, 18-22, and 52-54 were rejected under 35 USC § 103(a) as being unpatentable over Kimura in view of Mok. As described below, the rejection of claims 7-8, 18-22, and 52-54 should be withdrawn because the combination of Kimura and Mok does not disclose or suggest all of the features of these claims. Additionally, even if the combination of these references did disclose all of the features of the pending claims, the combination of these references is improper.

(1) Claim 7 is Directed to a Planarizing Machine

Claim 7 is directed at a planarizing machine that includes a table having a support surface and a processing pad on the support surface. The machine further includes a carrier assembly having a head configured to hold a microelectronic workpiece and a drive assembly carrying the head relative to the support surface. The machine still further includes a solution dispenser separate from the head. The solution

dispenser can be configured to discharge a planarizing solution onto a plurality of locations on the pad. The solution dispenser can include an elongated support extending over the pad at a location spaced apart from a travel path of the head, a fluid passageway carried by the support through which a planarizing solution can flow, and a fluid discharge unit slidably carried by the support and in fluid communication with the fluid passageway. The fluid discharge unit can be moveable along the support to discharge a flow of the planarizing solution onto separate areas of the processing pad.

(2) Kimura Discloses a Polishing Apparatus for Polishing an Object Such as a Semiconductor Wafer

Kimura discloses a polishing apparatus for polishing a wafer that has a turntable with an upper surface (col. 3, lines 38-58). A polishing cloth is mounted on the upper surface of the turntable which is rotated (col. 3, lines 38-58). The apparatus also has a top ring that is used to hold the wafer, rotate the wafer, and to press the wafer against the polishing cloth (col. 3, lines 38-58). The apparatus also has a plurality of radially arranged nozzles above the turntable for supplying polishing solution onto the surface of the polishing cloth (col. 3, lines 38-58). The nozzles are configured to provide polishing solution with radially varying concentration across the polishing cloth or polishing solutions of radially varying composition across the polishing cloth (col 3, lines 58-65; col. 5, lines 13-32; col. 6, lines 26-37). This radial variation in polishing solution is intended to adjust polishing rate along a radial direction on the polishing cloth (col. 6, lines 12-18 and 37-42).

(3) Mok Discloses an Integrated Semiconductor Substrate Bevel Cleaning Apparatus that Applies an Etching Solution Via Etchant Dispense Nozzles Supported By Movable Etchant Dispense Arms

Mok discloses a substrate bevel cleaning apparatus that applies an etching solution to a rotating substrate via fixed etchant dispense nozzles supported by movable etchant dispense arms (para. 44 and 50-51; Fig. 1-5). The apparatus in Mok includes a spindle assembly with a vacuum chuck that is used to rotate the substrate during the etching and rinsing processes, and to raise and lower the substrate among the rinse, transfer, and etch positions (para. 32-35 and 50-51). The apparatus includes

an upper dispense arm and a lower dispense arm that are coupled to an arm linkage and an arm linkage motor (para. 45). The arm linkage motor rotates the arm linkage, the upper dispense arm, and the lower dispense arm so that the arms will clear the substrate as the substrate is lowered and raised among the rinse, transfer, and etch positions (para. 45; Figures 2a-2c). "Two upper etchant dispense nozzles 120a,b are disposed at a distal end of the upper dispense arm 110, and a lower etchant dispense nozzle 120c is disposed at a distal end of the lower dispense arm 112" (para. 44). Once a substrate is placed in the etch position and the upper and lower dispense arms are moved into positions, the spindle assembly rotates the substrate and the nozzles spray etchant onto upper and lower edge portions of the substrate (para. 44-45 and 48-52; Figures 2a-2c). "Various widths of edge exclusion can be achieved by positioning the dispense arm at different angles relative to the substrate surface" (para. 44 discussing Figures 1 and 3). After the etching process is complete, the dispense arms are rotated away from the substrate, the substrate is placed in the rinse position, and the substrate is rinsed (para. 44-45 and 48-52; Figures 2a-2c and 4).

(4) The Combination of Kimura and Mok Fails to Disclose, Among Other Features, a Solution Dispenser Comprising an Elongated Support and a Fluid Discharge Unit Slidably Carried by the Support and Moveable Along the Support to Discharge a Flow of the Planarizing Solution onto Separate Areas of a Processing Pad

The combination of Kimura and Mok fails to disclose or suggest the combination of elements set forth in claim 7. In the above referenced Office Action, the Examiner admits Kimura does not disclose a nozzle or fluid unit that slides or rotates relative to a support arm. The Examiner goes on to suggests that Mok teaches nozzles that slide along their support arm as they pivot about a pivot point on the end of the support arm. The applicant respectfully disagrees.

Mok does not teach or suggest a fluid discharge unit carried by a support that is moveable relative to the support, let alone a fluid discharge unit that is slidably carried by a support and movable along the support to discharge planarizing solution onto separate areas of a processing pad. Mok specifically states with reference to Figures 1 and 3 that adjusting the width of the exclusion area is accomplished by "positioning the

dispense arm at different angles relative to the substrate surface" (para. 44). As illustrated in Figures 1-3, the nozzles appear to be fixed relative to the dispense arm so that movement of the dispense arm changes the distance and or angle of the respective nozzle, relative to the substrate, to adjust the spray pattern of the nozzle on the substrate. Mok does not disclose that the nozzles are movable relative to the dispense arms. Accordingly, Mok does not teach or suggest nozzles that slide, rotate, or otherwise move relative to their supporting dispense arms.

Mok also fails to teach a fluid discharge unit carried by an elongated support that is *slidably* carried by a support and movable along the support to discharge planarizing solution onto separate areas of a processing pad. Even if the nozzles in Mok could rotate relative to the dispense arms as suggested by the examiner, it does not inherently follow that the nozzles are slidable coupled to the dispense arm as recited in claim 7 of the present application. Additionally, because one purpose of Mok is to remove an edge bead from the perimeter of a substrate (para. 27), the end nozzles should stay at the perimeter of the wafer. As a result, there is no motivation in Mok to have a nozzle that is slidably carried by the dispense arm or that is movable along the dispense arm to discharge planarizing solution onto separate areas of a substrate. Accordingly, Mok and Kimura fail to teach or suggest a fluid discharge unit slidably carried by an elongated support and movable along the support to discharge planarizing solution onto separate areas of a processing pad.

Moreover, even if Mok taught the elements suggested by the Examiner, the combination of Kimura and Mok is improper because there is no motivation to combine the two references. Kimura teaches a wafer polishing machine that has a rotating turntable with a polishing cloth and a ring that rotates a wafer and holds the wafer against the polishing cloth. Mok teaches at an etching machine that sprays an etchant onto a substrate to remove an edge bead from the substrate. The two references teach two very distinct processes that apply different types of solutions to different elements. Additionally, there is no motivation in either reference to combine one reference with the other. Accordingly, the combination of these references is improper.

Additionally, the combination of Kimura and Mok is improper because the combination of these references destroys the teaching of each reference. If the radially arranged nozzles of Kimura were used in the etching apparatus of Mok, the entire surface of the substrate would be etched rather than the specific area containing the edge bead. Accordingly, the etching apparatus would no longer perform its intended function. If the nozzle arrangement in Mok were used in Kimura, polishing solution would be applied to the upper and lower surface of the edge of the polishing pad (or turntable), but would not be applied radially across the pad. This would not only prevent proper polishing of the wafer in Kimura, but Mok's non-radial arrangement of nozzles would make it impossible to vary the concentration or composition of polishing solution radially across the polishing pad to vary the polishing rate across the pad. Accordingly, the combination of Kimura and Mok is improper.


Therefore, for at least the reasons discussed above, claim 7 is in condition for allowance. Independent claims 8, 18, 19, 20, and 52 include, *inter alia*, features generally similar to those included in claim 7. Accordingly, for at least this reason, these independent claims are also allowable over the cited references. Claims 21-22 depend from claim 20 and claims 53-54 depend from claim 52. Accordingly, for at least this reason, these dependent claims are also in condition for allowance.

In view of the foregoing, the pending claims comply with 35 U.S.C. § 112 and are patentable over the applied art. The applicant accordingly requests reconsideration of the application and a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-6477.

A separate petition for a one-month extension of time accompanies this amendment along with the associated fee. No other fees are believed due with this communication. However, the Commissioner is hereby authorized and requested to charge any deficiency in fees herein to Deposit Account No. 50-0665.

Respectfully submitted,
Perkins Coie LLP

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Tim R. Seeley
Registration No. 53,575

Correspondence Address:

Customer No. 25096
Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
(206) 359-8000